

Cladograms Dinosaurs - Birds

Organism	3-toed foot wishbone	Flight feathers; arms as long as legs	Down feathers	Light Bones	Feathers with shaft, veins and barbs
Robin	+	+	+	+	+
Therapods	-	-	-	-	-
Sinornis	+	-	-	+	-
Archaeopteryx	+	-	+	+	+
Velociraptor	+	-	+	+	-
Allosaurus	-	-	-	+	-
Number of Shared Traits					

1. Create a cladogram based on the information about.
2. According to this cladogram, who is the oldest animal on this cladogram?
3. According to this cladogram, who is the most recent/youngest animal on this cladogram?
4. According to this cladogram, in what order did the animal groups evolve?
5. According to this cladogram, who is the **ancestor** of the *Allosaurus*?
6. According to this cladogram, who are the **ancestors** of the *Velociraptor*?
7. According to this cladogram, which animal is the **most recent common ancestor** of the *Velociraptor* and *Archaeopteryx*?
8. According to this cladogram, which traits are shared by *Velociraptor* and modern birds?
9. According to your chart, which organisms lack (does not have) down feathers?
10. According to your chart, which organisms have flight feathers with arms as long as legs?
11. According to your chart, what is the difference between the *Allosaurus* and the *Sinornis*?
12. These are fossils of two of the above vertebrates. Which ones are they?

